IN THE CLAIMS

16. (currently amended) A downhole injection evaluation system comprising:

a) at least one downhole fiber optic sensor permanently disposed in ~~an injection~~ a first well for sensing at least one parameter associated with injecting a fluid into a formation.

17. (currently amended) A downhole injection evaluation system as claimed in claim 16 wherein said system further includes an electronic controller operably connected to said at least one downhole fiber optic sensor.

18. (currently amended) A downhole injection evaluation system as claimed in claim 17 wherein said at least one downhole fiber optic sensor is operably connected to ~~at least one production well~~ an additional sensor in a second well ~~to provide said electronic controller, operably connected to said at least one downhole sensor and to said at least one production well sensor, with information from both sides of a fluid front moving between said injection well and said production well.~~

19. (currently amended) A system for ~~optimizing~~ controlling hydrocarbon production comprising:

a) a production well;

b) an injection well having a data link to [,] said production well , ~~and said~~

~~injection well being data transmittably connected~~;

c) at least one sensor located in either of said injection well and said production well, said at least one sensor being capable of sensing at least one parameter associated with an injection operation, said sensor being operably connected to a controller for controlling injection in the injection well.

20. **canceled**

21. A downhole injection evaluation system as claimed in claim 17 wherein said system further includes at least one downhole acoustic signal generator whereby signals generated by said at least one signal generator reflect off a flood fluid/hydrocarbon interface and are received by said at least one downhole sensor.

24. **canceled**

60. (new) The system of claim 16 wherein said at least one fiber optic sensor is disposed in one of (i) a production well, and, (ii) an injection well.

61. (new) The system of claim 17 wherein said electronic controller is at a surface location.

62. (new) The system of claim 17 wherein said electronic controller is at a downhole

location.

63. (new) The system of claim 18 wherein said first well is one of (i) an injection well, and, (ii) a production well, and wherein said second well is the other of (i) an injection well, and, (ii) a production well.

64. (new) The system of claim 18 wherein said sensor in said first well is operably connected to said sensor in said second well by a fiber optic link.

65. (new) The system of claim 63 further comprising a controller for controlling a flow control device in at least one of the first well and the second well.

66. (new) The system of claim 65 wherein said flow control device is selected from the group consisting of: (i) a valve, (ii) fluid control device, (iii) packer, (iv)sliding sleeve, (v) safety valve, (vi) an anchor, and (vii) a pump.

67. (new) The system of claim 63 further comprising an acoustic receiver in at least one of the first well and the second well.

68. (new) The system of claim 67 further comprising an acoustic transmitter in at least one of the first well and the second well.

69. (new) The system of claim 67 wherein said acoustic receiver receives acoustic signals indicative of a location of fluid front between the first well and the second well.

70. (new) The system of claim 67 wherein said acoustic receiver receives acoustic signals indicative of a fracture between the first well and the second well.

71. (new) The system of claim 70 wherein said signals are produced by a change in said fracture.

72. (new) The system of claim 68 wherein said acoustic receiver receives acoustic signals indicative of a location of fluid front between the first well and the second well.

73. (new) The system of claim 68 wherein said acoustic receiver receives acoustic signals indicative of a fracture between the first well and the second well.

74. (new) A method of producing hydrocarbons from a subterranean reservoir comprising:

a) permanently installing at least one downhole fiber optic sensor in a first well for sensing at least one parameter associated with injection of a fluid into said reservoir.

75. (new) The method of claim 74 further comprising using an electronic controller

operably connected to said at least one downhole fiber optic sensor.

76. (new) The method of claim 75 further comprising operably connecting said at least one downhole fiber optic sensor to an additional sensor in a second well.

77. (new) The method of claim 74 further comprising

(i) using at least one downhole acoustic signal generator for generating signals that interact with a flood front in said reservoir, and

(ii) receiving signals resulting from said interaction with said at least one downhole sensor.

78. (new) The method of claim 74 further comprising disposing said at least one fiber optic sensor in one of (i) a production well, and, (ii) an injection well.

79. (new) The method of claim 75 further comprising positioning said electronic controller at a surface location.

80. (new) The method of claim 75 further comprising positioning said electronic controller at a downhole location.

81. (new) The method of claim 76 wherein said first well is one of (i) an injection well, and, (ii) a production well, and wherein said second well is the other of (i) an

injection well, and, (ii) a production well.

82. (new) The method of claim 76 further comprising operably connecting said sensor in said first well to said sensor in said second well by a fiber optic link.

83. (new) The method of claim 81 further comprising using a controller for controlling a flow control device in at least one of the first well and the second well.

84. (new) The method of claim 83 wherein said flow control device is selected from the group consisting of: (i) a valve, (ii) fluid control device, (iii) packer, (iv)sliding sleeve, (v) safety valve, (vi) an anchor, and (vii) a pump.

85. (new) The method of claim 81 further comprising using an acoustic receiver in at least one of the first well and the second well for receiving acoustic signals.

86. (new) The method of claim 81 further comprising using an acoustic transmitter in at least one of the first well and the second well for sending acoustic signals into said reservoir.

87. (new) The method of claim 85 further comprising using said acoustic receiver for receiving acoustic signals indicative of a location of fluid front between the first well and the second well.

88. (new) The method of claim 85 further comprising using said acoustic receiver for receiving acoustic signals indicative of a fracture between the first well and the second well.

89. (new) The method of claim 88 wherein said signals are produced by a change in said fracture.

90. (new) The method of claim 85 further comprising using said acoustic receiver for receiving acoustic signals indicative of a location of fluid front between the first well and the second well.

91. (new) The method of claim 85 further comprising using said acoustic receiver for receiving acoustic signals indicative of a location of a fracture between the first well and the second well.

92. (new) The method of claim 81 further comprising:

(i) using an acoustic transmitter in one of said two wells for propagating acoustic signals into said reservoir, and

(ii) using an acoustic receiver in the other of said two wells for receiving said signals after passing through said reservoir.

93. (new) The method of claim 92 further comprising using a controller for processing said signals and determining from said received signals an indication of pressure transmissivity of said reservoir.

94. (new) The method of claim 92 further comprising:

(A) using a controller for processing said received signals,

(B) using a controller for controlling the operation of a fluid control device in at least one of the first well and the second well.